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## **624      EMERGENCY VEHICLE PREEMPTION**

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The purpose of this section is to establish a policy on emergency vehicle preemption (EVP) for traffic signals when requested by local governmental agencies.

### IMPLEMENTING STATEMENT

The installation of an Emergency Vehicle Preemption device on a traffic signal does not in any way reduce the responsibility of the emergency vehicle operator to ensure the intersection is clear prior to entering the intersection. The sole purpose of the Emergency Vehicle Preemption device is to facilitate clearing the intersection so the emergency vehicle can proceed with minimal delay.

Optical or sound-based EVP systems may be installed on traffic signal systems on State highways when requested by local governmental agencies; GPS-based EVP systems are not approved for use at this time. The local agency shall be responsible for all initial costs including the purchase and installation of the EVP system. The installation will be inspected by ADOT.

For traffic signals maintained by ADOT, ADOT remains responsible for signal timing and maintenance of all components within the controller cabinet. ADOT also shall be responsible for maintenance of the EVP system including all EVP components within the controller cabinet and any components attached to a signal pole or mast arm. Local agencies shall be responsible for the maintenance of all other associated components of the EVP system, i.e., transmitters installed on fire trucks or ambulances. Local agencies shall be responsible for furnishing all components for the EVP system, including EVP components located in the controller cabinet, any optical sensor devices, and an emitter for testing as specified in the required Intergovernmental Agreement (IGA). Any needed training for traffic signal technicians shall be paid for by the local agency. The costs, maintenance responsibilities, maintenance components, testing equipment, timing responsibilities, and training needs shall be set in the IGA.

For traffic signals not maintained by ADOT, the local agency shall be responsible for maintenance of the entire EVP system as well as the signal timing and maintenance of all other components within the controller cabinet. These costs, maintenance, and timing responsibilities shall be set in required IGAs.

IGAs entered into agreement prior to the issuance of this policy may remain in effect.

EVP systems for use on the State highway system shall be submitted to the Traffic Control Products Evaluation Committee for approval. Vendors should include equipment to test the components. Vendors interested in this process should contact the Arizona Transportation Research Center at 602-712-3134.

The following paragraphs describe the conditions under which Emergency Vehicle Preemption shall be installed, operated, and maintained:

1. Systems approved for use on the Arizona highway system are listed on the ADOT Approved Products List, accessible from the following site <http://www.dot.state.az.us/ABOUT/atrc/apl.htm>. Or by calling the Product Evaluation Program Administrator at (602)712-3134.
2. Upon installation of a new emergency vehicle preemption system, ADOT regional maintenance personnel, Traffic Operations Services field personnel, and the local fire department will conduct joint operational tests. A representative of the Emergency Vehicle Preemption supplier shall also be present to provide technical assistance during the initial operational tests. These tests will verify the operational status of the system as well as the suitability of the calculated pedestrian clearance times. Pedestrian clearances will typically not be abbreviated upon receipt of a valid preemption call. If it is determined that the pedestrian clearance times are too long to ensure unrestricted passage of emergency vehicles, they may be abbreviated. Traffic Operations Services personnel will determine a suitable pedestrian clearance time, subject to final approval by the Traffic Operations Services Engineer.
3. Different intersection designs require a variety of emergency vehicle detection and preempt sequence configurations. Figures 624-A through 624-I show examples of typical intersections with the recommended detection and preemption routines.
4. In intersections where there are permissive left turns, or exclusive/permissive left turns are implemented, detection will be limited to two channel operation, and two preempt routines. This prevents the left turn trapped car predicament. *(A driver who is waiting in the intersection to turn left, sees all the traffic lights on the approach change to red and observes the adjacent through traffic stop. Therefore, the driver might erroneously assume the opposing traffic will stop, and either turn unknowingly into the path of opposing traffic that still has the green, or be trapped in the middle of the intersection.)*
- 4a. Emergency vehicle preemption equipment and routines will be installed to match existing phasing and left turn configurations. Intersection phasing and left turn configurations will not be changed solely to accommodate a desired preempt routine.
5. Emergency Vehicle Preemption confirmation lights may be installed if requested by the local agency and approved in writing by the Regional Traffic Engineer. Existing confirmation lights may remain in place.
6. The Regional Traffic Engineer shall be responsible for establishing the necessary Intergovernmental Agreement(s) for the Emergency Vehicle Preemption systems. The local agency shall be responsible for supplying any necessary replacement parts. The Traffic Operations Supply Center will not stock or warehouse Emergency Vehicle Equipment.

## REFERENCE

“An Evaluation of Emergency Vehicle Preemption Systems”, City of Phoenix, August 1997.

APPROVAL

**The installation of EVP systems on traffic signals on State highways shall be approved by the Regional Traffic Engineer prior to the finalization of the IGA.**

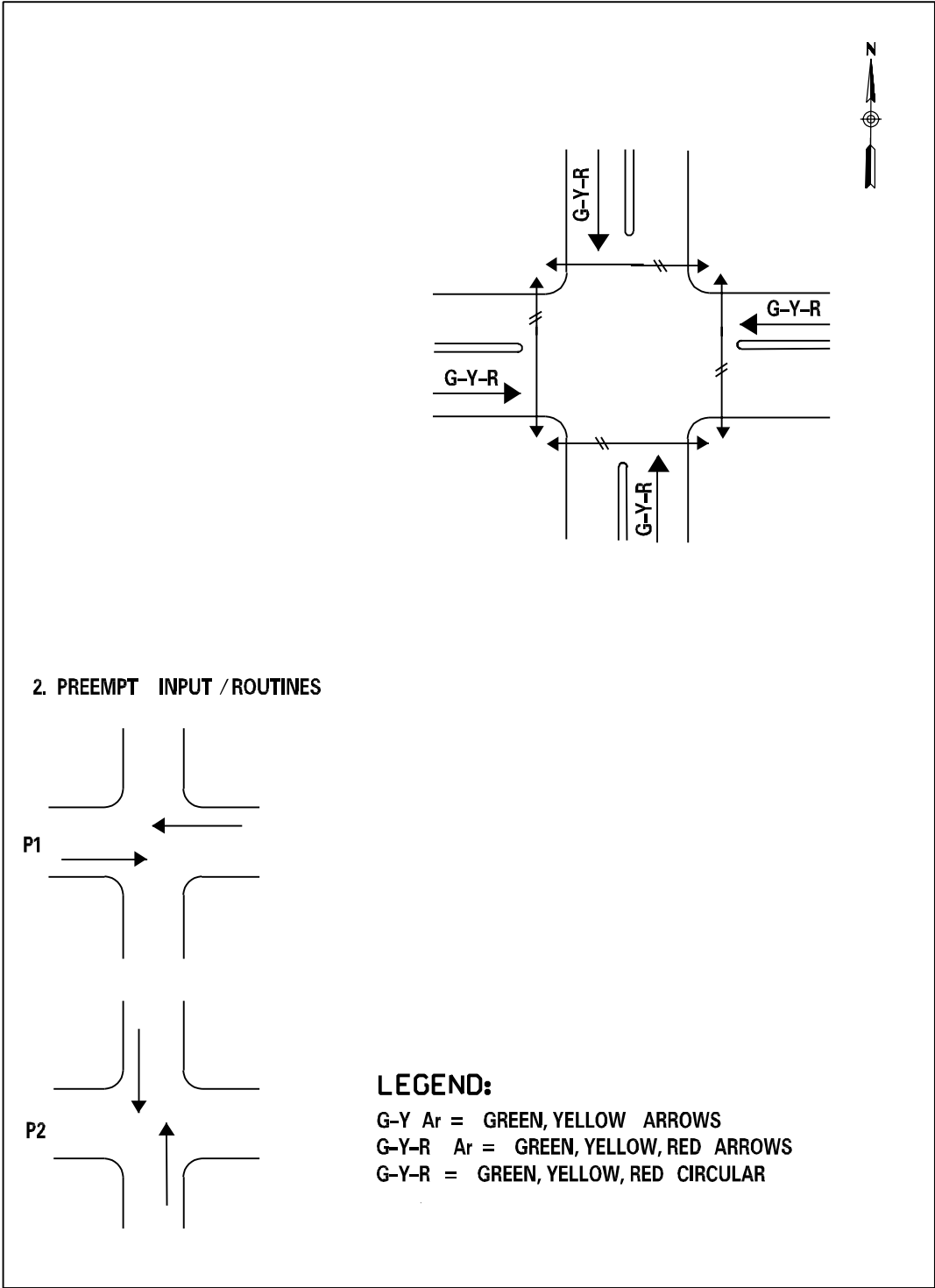
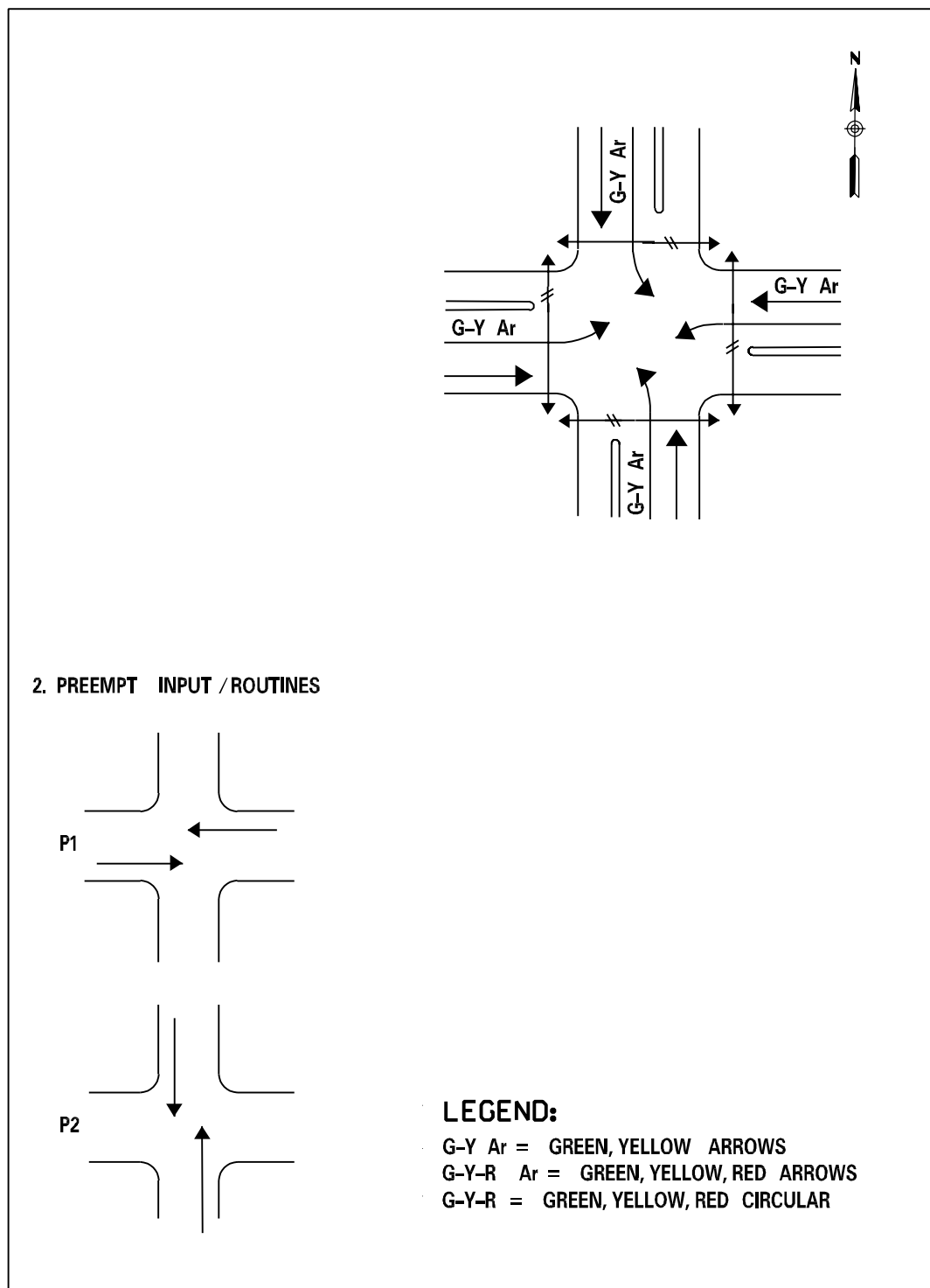
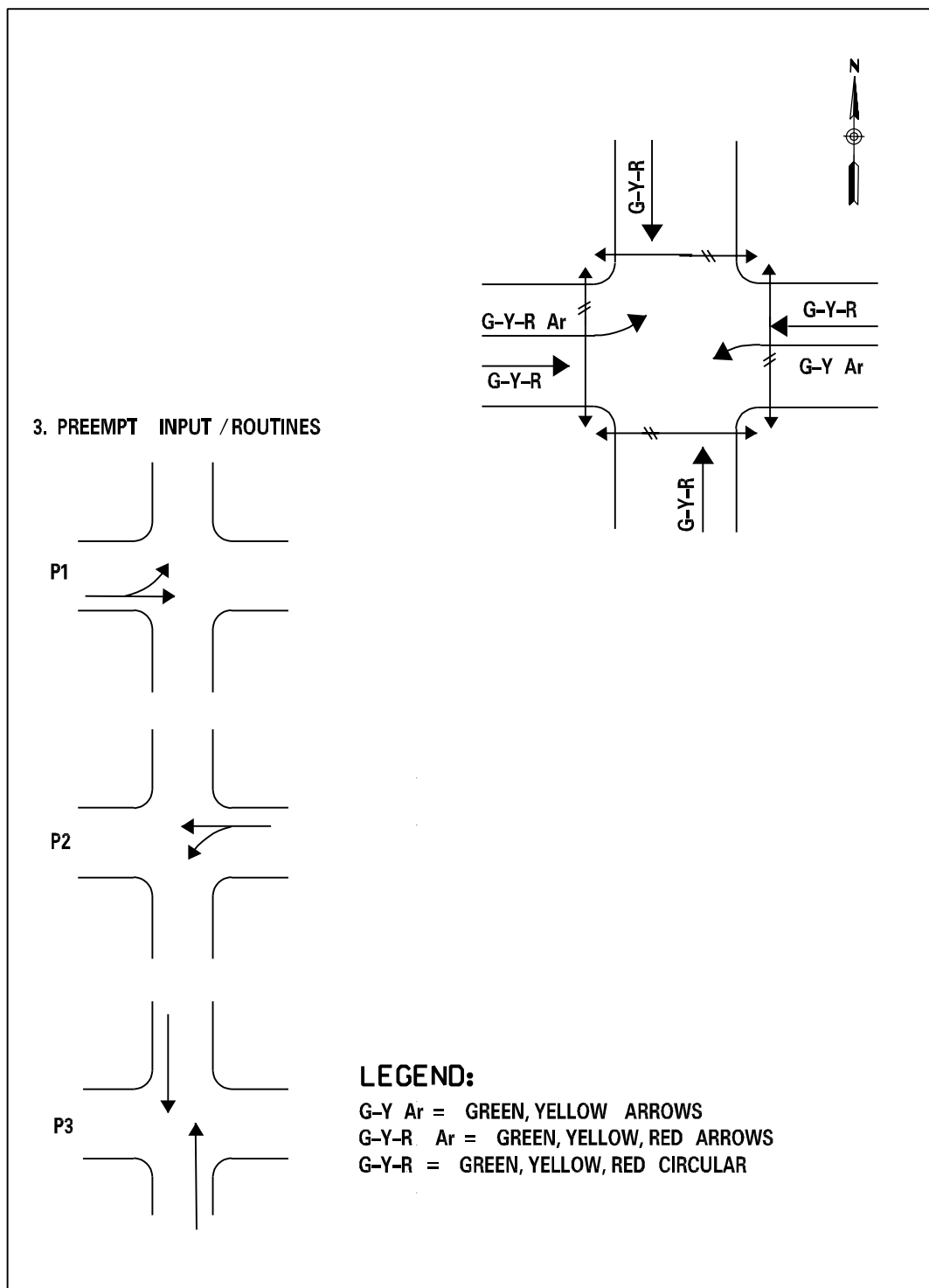


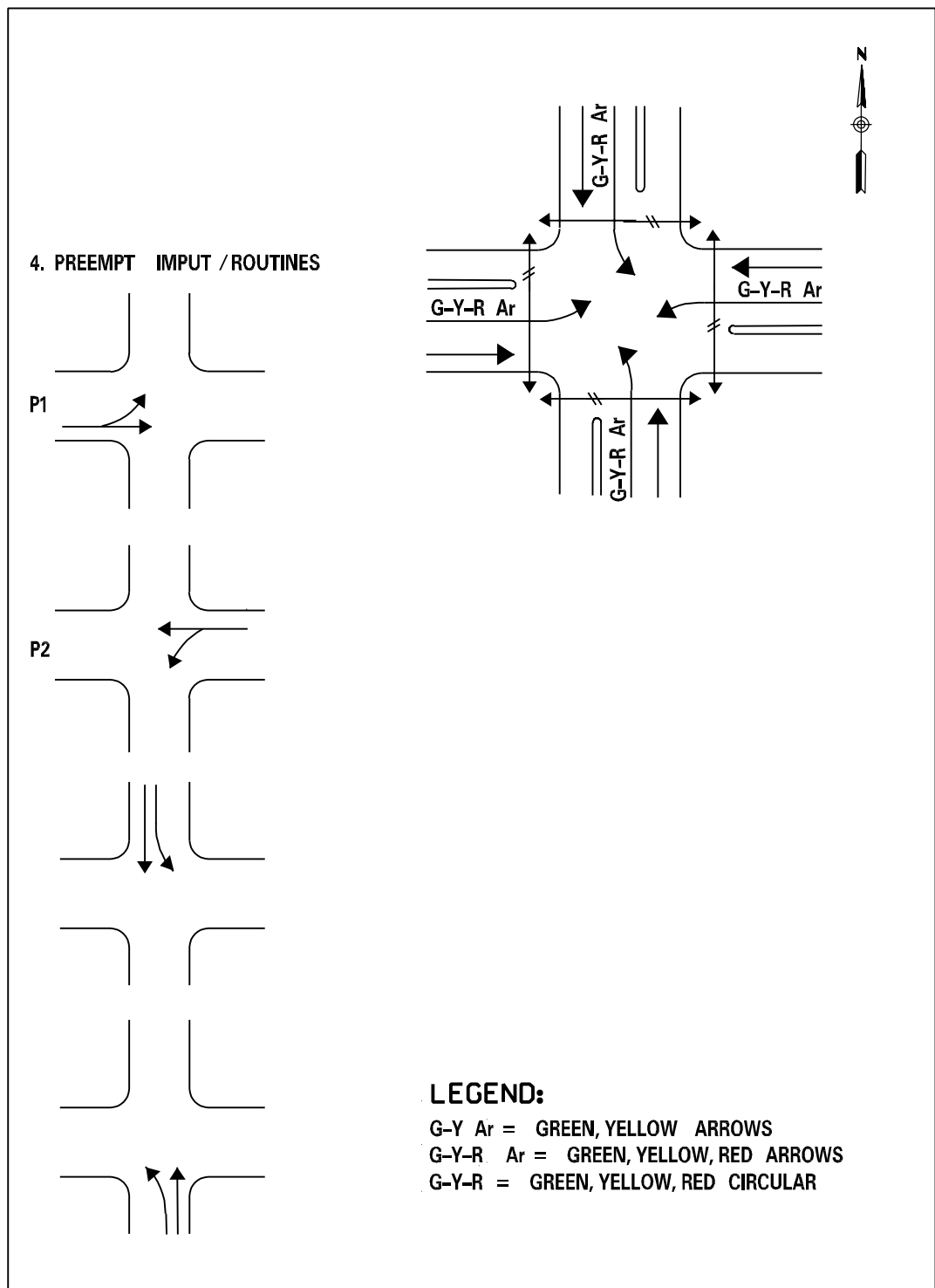
FIGURE 624-A  
PERMISSIVE LEFT TURNS - N & S + E & W



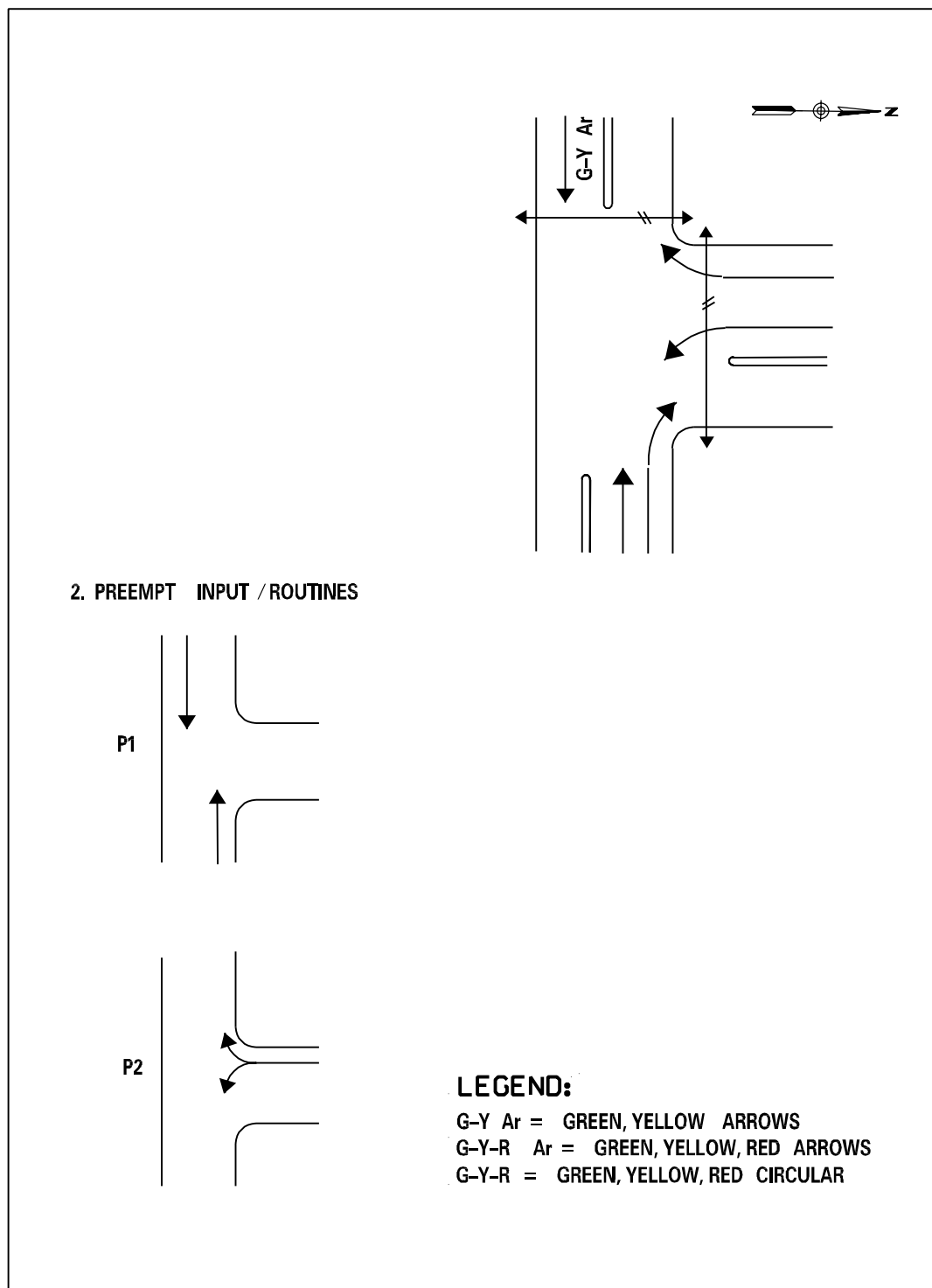
**FIGURE 624-B**  
**EXCLUSIVE/PERMISSIVE LEFT TURNS - E & W + N & S**



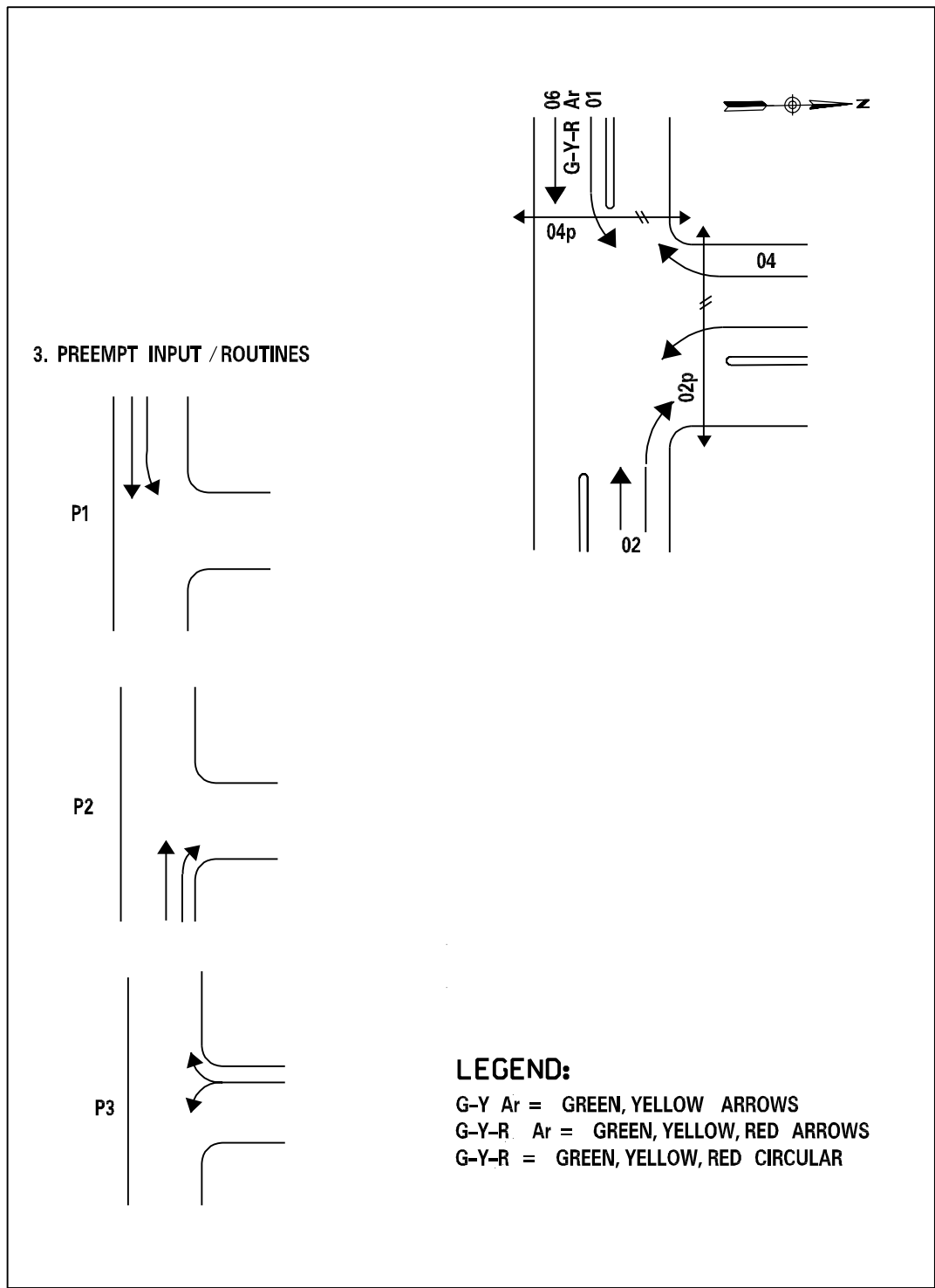
**FIGURE 624-C**  
**PERMISSIVE LEFT TURNS - N & S**  
**EXCLUSIVE LEFT TURNS- E & W**



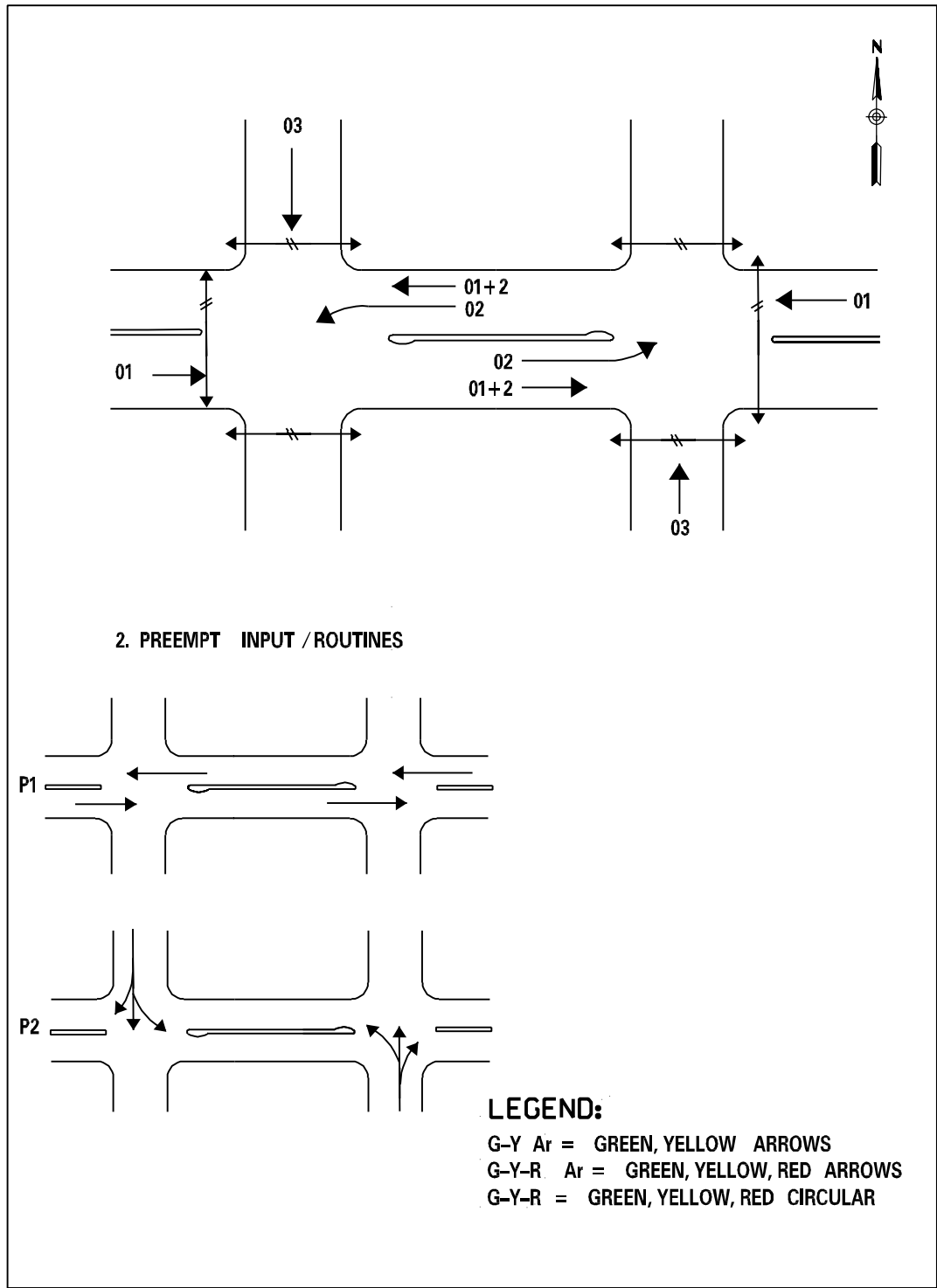
**FIGURE 624-D**  
**EXCLUSIVE LEFT TURNS E & W + N & S**



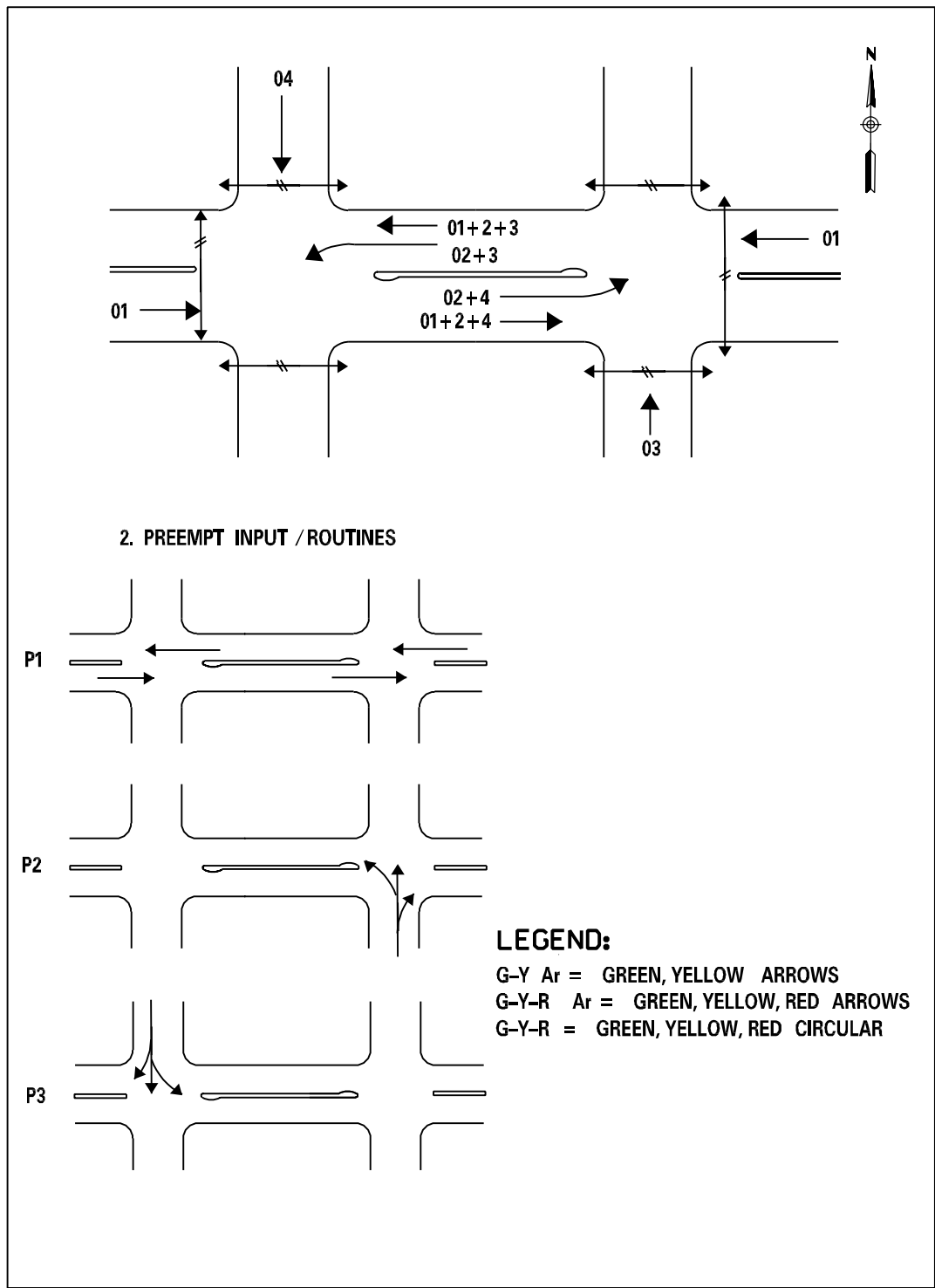
**FIGURE 624-E**  
**PERMISSIVE LEFT TURN - SB**  
**EXCLUSIVE /PERMISSIVE LEFT TURN - EB**  
**NO LEFT TURN - WB**



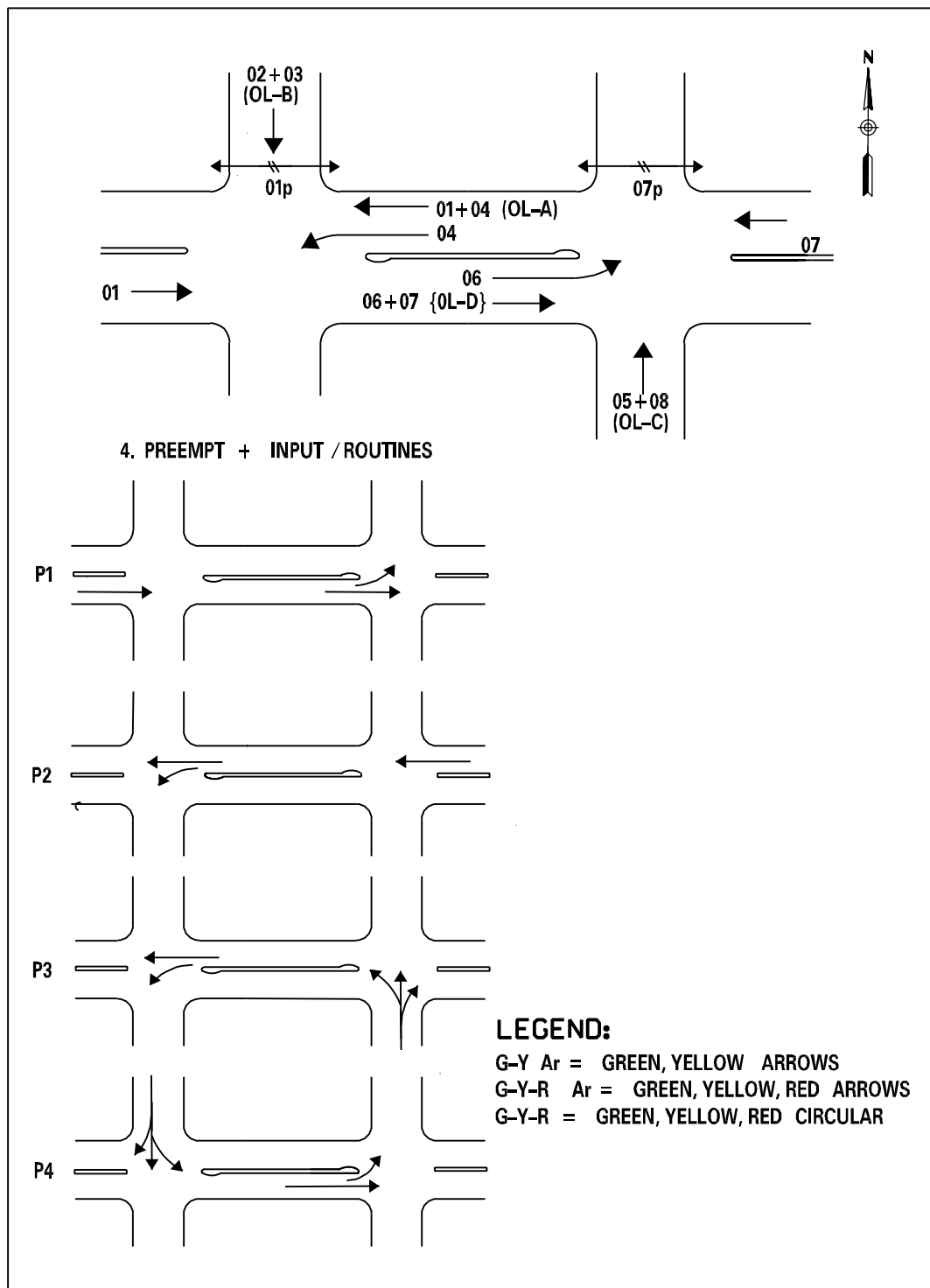
**FIGURE 624-F**  
**EXCLUSIVE LEFT TURN - EB**  
**PERMISSIVE LEFT TURN - SB**  
**NO LEFT TURN - WB**



**FIGURE 624-G**  
**EXCLUSIVE / PERMISSIVE LEFT TURNS FOR INSIDE LEFT TURNS**



**FIGURE 624-H**  
**EXCLUSIVE / PERMISSIVE LEFT TURNS FOR INSIDE LEFT TURNS**



**FIGURE 624-1**  
**EXCLUSIVE LEFT TURNS FOR INSIDE LEFT TURNS**